

ART. V.—*On a New Form of Self-Registering Rain-gauge.*

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FOR the ordinary purpose of rainfall observation and record, the common rain-gauge, where the rain collected is measured in a graduated glass measure once or twice a day, is all that is required.

Questions often arise, however, in which the *rate* at which heavy rains fall, or the *time over which the fall may be spread*, becomes an important point, and this is especially the case in cities, large towns and other localities, in connection with drainage, disposal of storm waters, &c. To meet such requirements a self-registering rain-gauge, that will furnish the required information, becomes a valuable and indeed an essential instrument.

Various forms of self-registering rain-gauges are constructed, the best of which are very expensive, while the cheaper ones are generally very defective and untrustworthy.

The form I now submit to the Society can, I think, claim simplicity and economy in construction, a high sensitiveness as well as trustworthiness.

The principle is this. The rain which is collected in a circular area of 10 in. diameter flows at once through the pipe into (G), a small copper vase-shaped vessel (E E) holding about 19·5 cubic inches of water. This vessel is suspended from an iron bracket by two steel spiral springs (F) made of the best pianoforte wire, and most carefully tempered. Inside this vessel is a small glass tube, bent into the form of a siphon (S), and projecting through the bottom for about 10 or 12 inches, forming an intermittent siphon, which, whenever a certain quantity of water has accumulated, rapidly empties the vessel. This acts so delicately that it always requires the same quantity, almost to a single drop, to cause it to overflow, and it will always overflow with this exact quantity. In this gauge it empties itself for every quarter of an inch of rain collected in the receiver—that is, when about 19·5 cubic inches ( $= \frac{1}{4}$  of an inch fall) have accumulated. As the rain drops into the vessel from the receiver the suspending spiral springs

